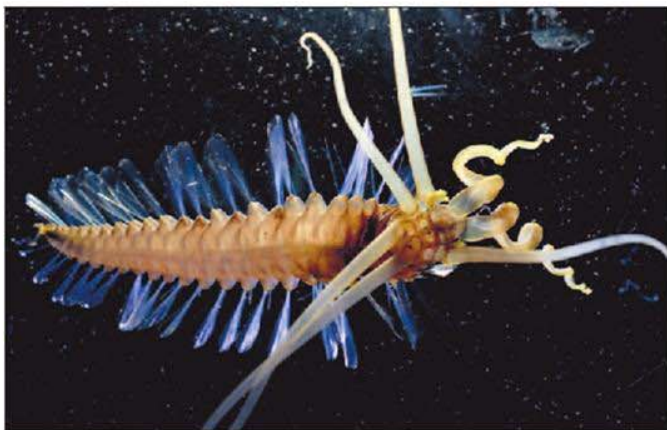


100 Iran moderates on trial: Critics call the mass indictment baseless. WORLD, A18

2 slain at gay teen center in Israel: Tel Aviv activists blame the ultra-Orthodox. WORLD, A20



LAPRENCE MADON/WIKI COMMONS

DISCOVERY: This creature seen off Borneo, a variety of worm, is one of more than 5,000 species found so far. The decade-long effort to catalog every ocean species, due to finish next year, also uncovered some startling behavior.

A deep dive into the great mysteries of life

A sea catalog-in-progress has already upended scientists' views.

BOB DROGIN
 REPORTING FROM WOODBRIDGE, MASS.

The first comprehensive effort to identify and catalog every species in the world's oceans, from microbes to blue whales, is a year from completion. But early discoveries have profoundly altered understanding of life beneath the sea, senior scientists say.

New tracking tools, for example, show

that some bluefin tuna migrate between Los Angeles and Yokohama, Japan, one tagged tuna crossed the Pacific three times in a year. White sharks forage even farther for food, commuting between Australia and South Africa.

Some turtles circumnavigate the Pacific, paddling from Baja to Borneo. And a gray-headed albatross—a member of the world's most threatened family of birds—stunned researchers when it raced around the globe in 46 days flat.

"The extent of movement and migration is way beyond what anyone had... even contemplated," said environmental scientist Jesse Ausubel, a co-founder of the Census of Marine Life. "What we're learning is fundamentally different from what we knew before."

Since the \$650-million, decade-long project began in May 2000, researchers have used deep-sea robots, laser-based radar and super-sensitive sonar that can

[See Marine, Page A10]

Justice is a trial for witnesses in Russia

MEGAN K. STACK
 REPORTING FROM MOSCOW

Valery Kazakov was almost to the prosecutor's office when the killers caught him. He was shot as he cut through an alleyway, and when he stumbled bleeding into the street, a man bent down to stab the final breaths out of him.

It was 3 o'clock in the afternoon, in the heart of the sleepy town of Pushkino. As far as the townspeople were concerned, it was a public execution. Kazakov, a former police officer, was believed to have been on his way to testify in the corruption case against the former mayor.

It has been a year now, and Kazakov's widow holds out little hope of justice, shrugging off the idea with wary skepticism. Police recently arrested the alleged killer, but that's just a "technical detail," Maria Kazakova says. She wants to know who put the hit on her husband, who ordered and paid for it.

"Maybe we'll find out, if the killer isn't killed before he starts talking," Kazakova pauses, staring down into her coffee cup. "Nothing is clean in Russia."

This is the "legal nihilism" [See Russia, Page A22]



PETER DUTTA/WIREIMAGE.COM

'THE CAIRO CELL': President Obama and aides discuss his address to the world's Muslims, delivered June 4 from Cairo. The team solicited input from dozens of people.

The making of a message

"We have to say everything... I'm not going all the way to Cairo to do anything else," Obama said.

CHRISTI PARSONS
 REPORTING FROM WASHINGTON

He sat with his legs crossed in an armchair in the Oval Office, his brow furrowed. Aides clustered on the couches around him. They could see black scratch marks all over their proposal for the most sen-

sitive speech of his young presidency—his long-promised address to the world's 1.5 billion Muslims.

For weeks, they had toiled over the text. Now, some stole glances at the lead writer of the address, 31-year-old Ben Rhodes, as the lengthening silence confirmed that their best shot had fallen short.

Finally, President Obama dropped the manuscript into his lap and took a deep breath. "I know you've been under a lot of pressure to get this right," he said. "But this speech is way too cautious. We have to say everything and say everything candidly. I'm not going all the

way to Cairo to do anything else."

Despite the risk that he would give offense, he told his staff that he intended to address some of the most sensitive issues in foreign policy—terrorism, the Arab-Israeli conflict, the inflammatory rhetoric of many Islamic leaders—in terms that would grab the world's attention.

Obama worked his way around the cream-colored couches that flank the Oval Office fireplace, probing his aides' thoughts.

"We knew all the arguments not to say things," one recalled. [See Speech, Page A11]

Film workers claim illnesses rooted in soil

Dozens with health problems blame a Downey movie studio built on a former NASA site.

RICHARD VERRIER

In 34 years as a Hollywood prop maker, John Izumi rarely missed a day of work. Now he can barely pull himself out of bed.

His medical records describe a daunting array of ailments: chest pains, headaches, dizziness, memory loss, red blotches and pimple-like bumps. He says he has trouble breathing at night and wakes up with tremors.

Izumi traces these symptoms to the three months he spent at Downey Studios in 2004 and 2005 building sets for the science-fiction movie "The Island."

"It's like my body is breaking down," said the 55-year-old Burbank resident. "My life has changed ever since I worked out there."

Dozens of film production workers have similar complaints about Downey Studios, which occupies the site of a former NASA plant southeast of Los Angeles that produced spacecraft for the Apollo moon missions.

Part of the property was turned into a film production center early in this decade, after a cleanup intended to protect workers and the public from the toxic residue of years of aerospace research and manufacturing. The transformation was celebrated as an example of how old industrial sites, often a burden on communities, can be reclaimed for productive uses.

But carpenters, welders, electricians and other film production workers say they developed severe respiratory and other problems while working there and have never recovered.

Film workers have given the name "Downey flu" to one particular cluster of symptoms—chronic congestion, headaches and rashes. Some have even refused to work there, a rare phenomenon in the tough, blue-collar world of set construction.

At least 34 people have filed workers' compensation claims over illnesses they trace to the studio complex. The Times obtained detailed records on 18 of the [See Downey, Page A14]

FAMOUS CHURCH, BESIEGED PASTOR

As some seek to oust the head of L.A.'s First AME, he stands firm.

TERESA WATANABE

Nearly five years after replacing a legendary pastor in one of the nation's most prominent African American pulpits, the Rev. John J. Hunter counts his blessings.

Since taking the helm of the First African Methodist Episcopal Church of Los Angeles in October 2004, Hunter says, he has been privileged to bring 3,000 new souls to Jesus. He and his staff have launched such new community services as a summer enrichment program for children deprived of summer school by budget cuts.

His church shines with handsome new pews and carpets, a repaved parking lot and spruced-up landscaping. The church's affiliated nonprofit corporations have brought in \$4 million in new grants. And the church recently joined a \$50-million deal that Hunter says could help revitalize the congregation's West Adams neighborhood and bring in income for decades to come.

"It's amazing what we've accomplished," said the 52-year-old pastor. "The overwhelming majority of people are pleased with our direction."

"So why is Hunter so besieged? Hard as he may try, Hunter [See Hunter, Page A6]



EUROPE ON TWO WHEELS TRAVEL

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LAWRENCE MADIN WOODS HOLE OCEANOGRAPHIC INSTITUTION

SEE-THROUGH: This transparent pink sea cucumber, as its full (and fully visible) gut attests, has recently dined. It eats on the ocean floor and uses its wing-like collar to swim.



LAWRENCE MADIN WOODS HOLE OCEANOGRAPHIC INSTITUTION

VARIABLE: This squid, *Histioteuthis* sp., is about 6 inches long and is covered with spots, called chromatophores, that let it change color at will. Its eyes are different sizes.



LAWRENCE MADIN WOODS HOLE OCEANOGRAPHIC INSTITUTION

GHOSTLY: This 1.2-inch-long isopod, a relative of the land-dwelling pill bug, was collected 1 1/2 miles down in the Celebes Sea, off Borneo, from a remotely operated vehicle.



LAWRENCE MADIN WOODS HOLE OCEANOGRAPHIC INSTITUTION

DECEPTIVE: Scientists believe this transparent jellyfish has red pigment on its stomach to keep bioluminescent prey from advertising its whereabouts to larger, hungry animals.

Finding strange new worlds

[Marine, from Page A1] track fish 99 miles away.

Census teams also embarked on about 400 shipboard expeditions. They discovered life forms faster than they could verify and name — more than 5,000 suspected new species so far, many from the hottest, coldest, saltiest and deepest parts of the oceans.

They also found a very old species, a shrimp that textbooks said had been extinct for 50 million years. The five-inch specimen, with big eyes and red spots, was found swimming a mile beneath the ocean off northeast Australia.

"It recalls the time, hundreds of years ago, when science really was about voyages of discovery," said Lawrence Madin, director of research at the Woods Hole Oceanographic Institution, the world's largest private, nonprofit center for marine science.

Nine years of field study — on tropical reefs and under polar caps, on the sea floor and in the surf — has led to sharp reappraisals of how the world works and how it is changing. Some scientists compare the search for biodiversity to the successful effort to map the human genome.

"We're taking stock for the first time on what lives in the ocean," said Paul Hahn, a marine historian at Trinity College Dublin in Ireland. "That is of fundamental importance to life on Earth and to human existence."

Among the findings: The abyssal plains, the inky-black, featureless ocean floor that covers more than half the planet, are not barren, lifeless deserts.

The proof came when scientists used fine-mesh sieves to trawl nearly three miles down. To their surprise, they scooped up tens of thousands of swimming snails, worms and other



CHRIS LINDEN WOODS HOLE OCEANOGRAPHIC INSTITUTION

VOYAGE: The Census of Marine Life embarked on 400 shipboard expeditions. The study is seen as "the Rosetta Stone for the future."

tiny invertebrates in almost every net. Many had never been seen before.

"Probably the greatest diversity of life is in the deep sea," said Fred Grassle, director emeritus at the Institute of Marine and Coastal Sciences at Rutgers University in New Jersey. "We're just beginning to learn about it."

The census, which will be released in October 2010, is cataloging even the smallest of organisms, such as bacteria and the single-celled microorganisms called archaea. Scientists suspect they play a role in the carbon and nitrogen cycles, which are crucial to sustaining life.

"We have clearly grossly underest-

mated the microbial diversity in the oceans," said Paul Snelgrove, an oceanographer from Memorial University of Newfoundland in Canada. "And that's enormously important. Those microbes do a lot of the things that keep the Earth humming along."

On the opposite end of the spectrum, researchers found huge scaly worms, manhole-sized starfish, and sea spiders as big as dinner plates during expeditions to the frigid, swirling seas of the Antarctic, where the underwater carousel acts as a kind of incubator for new species.

In addition, forensic historians working on the census examined ancient Greek texts, pre-Incan pottery

and even 100 years' worth of restaurant menus archived at the New York City Public Library in hopes of documenting man's impact on the world's oceans.

In Europe, they found Renaissance-era paintings of fish markets with seafood that no longer exists in local waters. In North America, customs records and captains' logbooks indicated that fishermen in the Gulf of Maine hooked 30 times more cod in 1890 than commercial fleets do today.

The bottom line: Overfishing has drastically reduced some fish populations. And many species are smaller in size than just a few decades ago.

"What we're seeing is the loss of productivity is almost everywhere, not just in a few places," said Andrew Rosenberg, a professor at the University of New Hampshire. "We've never had this kind of data."

Aussubel and Grassle hatched the idea of surveying every species in the sea while working from a ramshackle office at the Woods Hole institute in July 1996. "Almost everyone said it was crazy," said Aussubel, a senior research associate at Rockefeller University in New York.

Ignoring the skeptics, Aussubel persuaded the Alfred P. Sloan Foundation to provide funding. Governments and other foundations later chipped in.

The scientists set three goals. First, they would build a global registry of every marine life form, worms to walrus, as a baseline for research and public policy. Second, they would map where each species lives and travels to better understand its habitat. Lastly, they would assess the relative abundance of each organism — past, present and future.

Most marine biologists are specialists who work alone or in small groups.

The census has changed that. About 2,000 scientists in 80 countries have joined forces in the largest collaboration in the history of ocean science.

"This was a field in need of a revolution," said Ann Bucklin, who heads the marine sciences department at the University of Connecticut. "It has opened up global oceanography."

Scientists have embraced the effort to compile a "bar code of life" that uses DNA sequencing to identify each marine species. Until now, eyeballing a crab, coral or cod was the only way to identify it. Tiny zooplankton were even tougher.

"In the past, I have spent hours and hours at the microscope looking at spines or legs or other minutiae to tell species A from species B," said Nancy Copley, a Woods Hole researcher. "Sometimes it was very hard to tell."

By next year, the online database will contain photos, DNA codes and websites for at least 200,000 unique species, including more than 16,000 fish, scientists said.

"It's going to be the Rosetta Stone for the future," said Peter Wiebe, a senior biologist at Woods Hole. "Once we know what's out there, we can build on it."

The list would be longer, but researchers used DNA analysis to cut more than 50,000 "aliases" — different names for the same creature — from the species list. The worst case of multiple identity was a breadcrumb sponge, *Heterohondria poncovei*, which had 56 names around the world. Now it will have one.

Though the science is crucial, said Aussubel, "in the end the beauty of the ocean is what inspires us."

"Sometimes I think it was a terrible mistake to crawl out onto the land."

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